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Citation for published version:

Majid, I, Ismail, K & Cooper, S 2011, 'Prevalence of entrepreneurial management practices in technology-based firms in Malaysia', *African Journal of Business Management (AJBM)*, vol. 5, no. 6, pp. 2075-2082.
<https://doi.org/10.5897/AJBM09.245>

Digital Object Identifier (DOI):

[10.5897/AJBM09.245](https://doi.org/10.5897/AJBM09.245)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

African Journal of Business Management (AJBM)

Publisher Rights Statement:

© Majid, I., Ismail, K., & Cooper, S. (2011). Prevalence of entrepreneurial management practices in technology-based firms in Malaysia. *African Journal of Business Management*, 5(6), 2075-2082.
<http://www.academicjournals.org/AJBM>

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Full Length Research Paper

Prevalence of entrepreneurial management practices in technology-based firms in Malaysia

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Accepted 8 February 2011

It has been widely agreed that entrepreneurship leads to firms' success. Since companies with a high level of entrepreneurial propensity are focussed on "the pursuit of opportunity regardless of resources currently controlled", it can be expected that those companies will be highly leveraged, resulting in high performance and effectiveness and eventually will lead to business success. Stevenson's six dimensional construct of Entrepreneurial Management (EM), as interpreted and operationalised by Brown et al. (2001), consists of strategic orientation (SO), resource orientation (RO), management structure (MS), reward philosophy (RP), growth orientation (GO) and entrepreneurial culture (EC). This study attempts to explore on the issue of as to what extent the entrepreneurial management approach is being adopted by the sample firms. Based on the global measure of EM, the results of the descriptive statistical analysis suggest that a large majority of the firms may be classified as entrepreneurial. On further investigation on each dimension of the EM construct, mixed results were found on the prevalence of EM. MS, SO and EC dimensions show high prevalence in firms with strong entrepreneurial propensity. This indicates that the firms tend to be more entrepreneurial with regard to the MS, SO and EC dimensions. However, for the GO and RO dimensions, the results show that the sample firms tend to be on the average scores.

Key words: Entrepreneurial management, multimedia super corridor Malaysia, technology-based firms, technical entrepreneur.

INTRODUCTION

It has been suggested that entrepreneurship leads to firms' success (Covin and Slevin, 1986; Harms and Ehrmann, 2003). Since companies with a high level of EM are focussed on "the pursuit of opportunity regardless of resources currently controlled" (Stevenson, 1999), it can be expected that those companies will be highly leveraged, resulting in high performance and effectiveness (Harms and Ehrmann, 2003). It is also argued that from a practical standpoint, interest in entrepreneurship stems from the perception that entrepreneurship leads to business success (Covin and Slevin, 1986).

The theory of entrepreneurial management

It is commonly agreed that there is no universally-accepted definition of entrepreneurs or entrepreneurship (Morris and Lewis, 1995; Stearns and Hills, 1996; Dana, 2001; Beaver and Jennings, 2005). As remarked by Fiet (2000), recent efforts to develop entrepreneurship theory have tended to accumulate separate rather than cumulative theories. This resulted in researchers developing separate theories instead of building upon those that relate to each other and discarding those that are invalid or irrelevant. This is partly because of the dynamic nature of research and thinking in this area. New ideas from research forwarded by various scholars with similar interests over time contribute to the diversity in perspectives and approaches to the subject.

Shane and Venkataraman (2000) offered an interesting

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interpretation of entrepreneurship by suggesting the definition of entrepreneurship "as the scholarly examination of how, by whom and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited." Their approach stresses the importance of opportunities in entrepreneurship study. This includes the study of sources of opportunities, the processes of discovery, evaluation and exploitation of opportunities, and the set of individuals who discover, evaluate and exploit them. It is rather clear that the main concern of this approach is to incorporate central phenomenon in entrepreneurship, the presence of lucrative opportunities and the presence of enterprising individuals (Shane and Venkataraman, 2000). The emphasis on these two phenomena has some similarity with Stevenson's EM conceptualisation of entrepreneurship as used in this study.

The essence of the concept of EM, which was chosen as the underlying theory for entrepreneurial management in this study, is the definition of entrepreneurship as 'an approach to management that is, a process by which individuals, either on their own or inside organisations, pursue opportunities without regard to the resources they currently control' (Stevenson and Jarillo, 1990), where 'opportunity' is defined as a 'future situation which is deemed desirable and feasible' (Stevenson and Jarillo, 1990; Stevenson et al., 1999). Stevenson and Gumpert's (1985) early ideas on entrepreneurial management revolved around the questions that concern the "would-be" entrepreneur: How can I make innovation, flexibility and creativity operational? These questions were addressed by examining the entrepreneurial behaviour of the entrepreneur. They suggested that entrepreneurship should be viewed in the context of a range of behaviours. To simplify their analysis Stevenson and Gumpert (1985) suggested managerial behaviour to be viewed in terms of extremes. At one extreme was what they called the "promoter" type of manager, who feels confident of his or her ability to seize opportunity. This type of manager is considered 'to expect surprises and expect not only to adjust to change but also capitalise on it and make things happen'. At the other extreme is the "trustee" type of managers who feels threatened by change and the uncertain situations. They are assumed to rely on the status quo and view predictability as a desired factor in fostering effective management of existing resources while unpredictability endangers them. Thus, in sum, the "promoter's" sole intention is to pursue and exploit opportunities without regards to resources currently controlled, while the "trustee" aims to use efficiently the resources currently controlled.

On the same note, Eliasson and Davidsson (2003) identified the contrasting perspectives of entrepreneurial management with administrative management (Kanter, 1985, 1983; Stevenson and Gumpert, 1985; Stevenson and Jarillo, 1986, 1990) where entrepreneurial management is perceived as having an emphasis on facilitating

for organisational members to create change by developing something new (Kanter, 1985) while conversely, administrative management is geared towards existing activities and preserving the existing status-quo to ensure continuation of already developed activities.

Technology-based firms and their environment

Litvak and Maule (1976) following Cooper (1970) defined a technology-based firm as a company which emphasises research and development or which places major emphasis on exploiting new technical knowledge. These two elements in general have dominated the perception towards the notion of technology-based sectors as concluded by Cooper (2000) that the existing definitions of technology-based sectors is classified into two categories; those drawing a distinction between product and process innovation, and those using surrogate measures, such as the proportion of employees in research and development (R and D). This agrees with the assumption made by Zahra (1999) that companies that invest heavily in research and development frequently introduce more products to their markets, often develop radically innovative products and frequently obtain more patents and copyrights.

With regard to technology-based new ventures, Zahra and Bogner (1999) and Oakey (2003) identified that one of the most important resources a new venture has is technology, which influences the founding of the firms. Technological resources include machinery, tools, equipment, knowledge and skills that a firm acquires or controls. They are also embedded in a firm's patents, which capture the knowledge and skills firms have attained from deploying their technological resources (Zahra and Bogner, 1999). Fontes and Coombs (1996) posited that the creation of new technology-based firms is based on the identification and exploitation of technological opportunities that are ignored or neglected by existing organisations.

On the same note, the business environment established by the Malaysian Government in the MSC (as the population under this study) is apparently geared at attracting leading ICT companies worldwide as well as encouraging the local entrepreneurs to establish or relocate their firms in the MSC. This is done through the development of highly advanced infrastructural facilities, such as high-capacity global telecommunications and logistics networks within the MSC region and supported by a range of financial and non-financial incentives for investors (<http://www.mdc.com.my/msc/msc.asp>). These facilities are viewed as important factors in providing conducive business environment that helps accelerate the birth-rate and attracts the relocation of high-tech multimedia firms in the MSC which is consistent with the related literature in this area.

The technical entrepreneur

What actually differentiates between technical entrepreneurs and other type of entrepreneurs is obviously the technical expertise or niche that a technical entrepreneur has. Roberts (1991) through his review into the literature of technology-based entrepreneurship suggested that technology entrepreneurs can be classified into two categories namely scientist or technician-based entrepreneurs and commercially-based entrepreneurs. As suggested by Cornwall and Naughton (2003), what often initially motivates technical entrepreneurs is a technical improvement of a product and service, that is, they want to make something better. Their traits of industriousness, ingenuity and frugality, guide them in the process of adopting courses of action which involve allocating necessary resources so as to capitalise on opportunities in the marketplace in a way that is profitable (Cornwall and Naughton, 2003).

Jones-Evans (1995) defines a technical entrepreneur as the founder and current owner-manager of a technology-based business who is primarily responsible for its planning and establishment, and currently having management control of the organisation. This acknowledgement of the crucial role played by the founders of the new ventures is actually based on Cooper and Bruno's (1977) arguments that; "For new technology-based firms, the primary assets are the knowledge and skills of the founders. Any competitive advantage the new firm achieves is likely to be based upon what the founders can do better than others" (Cooper and Bruno, 1977).

Jones-Evans (1995) concludes that the high degree of technological expertise (gained within universities or companies active in a given technology field) that such individuals bring to their new ventures will form the basis of the technologies and products to be developed by the company and, determines the markets targeted. Jones-Evans (1995), therefore, suggested that there are two types of competence associated with owner-management of small technology-based businesses, namely the management competence, that is, a capacity to deal with the management of a company and technical competence, that is, a sufficiency of qualification in the technical areas on which the products or services of the company are based. By contrast, Chandler and Jansen (1992) identified three distinct roles that a founder must assume within a small business:

1. "The entrepreneurial role: An ability to recognise and envisage taking advantage of opportunity; the drive to see firm creation through to fruition, which requires the willingness and capacity to generate intense effort for long hard hours,
2. The managerial role: Conceptual competence, the mental ability to co-ordinate all of the organisation's interests and activities; human competence, that is, the ability to work with, understand and motivate other

people, both individually and in groups; political competence, the ability to enhance one's position, build a power base, and establish the right connections, and

3. "The technical-functional role: The ability to use the tools, procedures and techniques of a specialised field."

Jones-Evans (1995) through his examination of the general occupational experience of the technical entrepreneurs in the innovation processes at previous organisations which they have worked for has been able to introduce four general types of technical entrepreneurs which he named the "research", "producer", "user", and "opportunistic" technical entrepreneur.

"Research" technical entrepreneur is referred to as one who has been involved in scientific or technical development, either at an academic level at a higher educational establishment or in a non-commercial research laboratory (such as working for a government body)."

1. "The "producer" organisational background is one in which the entrepreneur has been involved in the direct commercial production or development of a product or process, utility in a large organisation."
2. "The "user" technical entrepreneur may have been involved as an end-user in the application of the specific product or technology (perhaps in support services such as technical support), but without direct involvement in the development of the technology."
3. Finally, "the "opportunistic" technical entrepreneur refers to an individual who has identified a technology-based opportunity and, while initiating and managing a small technology-based venture, either has little or no technical experience or whose previous occupational experience was within non-technical organisations."

METHODS

Both types of data, the secondary and primary data, were incorporated in this study. Secondary data were obtained from journal articles and books to provide a firm foundation in structuring the underlying theory for the study. Another form of secondary data used in this study is data obtained from the MSC's official website and data that were provided directly by the officials of the MDC upon request by the researcher. Huge amounts of information were obtained through the MSC's official website in the form of updated facts and figures pertaining to the progress of the MSC project.

Primary data were collected through postal and email surveys and were used in the data analysis process in order to test the proposed hypotheses. As this study is aimed to cover the whole population of the Malaysian-owned MSC status companies and the respondents were the owner-managers, CEOs or other senior management of the firms, a survey method using postal, self-administered questionnaire was deemed practical.

This is based on the common thought that postal questionnaires are perceived as less expensive for they do not incur expensive travel and accommodation expenses; they allow for a large sample spread over a wide area to be surveyed; they are a relatively quick way of receiving a response; and they avoid personal bias (White, 2000; Brewerton and Millward, 2001).

RESULTS

Prevalence of EM and its dimensions

The sample firms were examined for the prevalence of EM and its respective dimensions (Strategic Orientation, Management Structure, Growth Orientation, and Entrepreneurial Culture) in terms of the mean, percentage, and frequency counts. This is to demonstrate the extent to which EM and its various dimensions are being adopted and practiced amongst the sample firms as perceived by the lead entrepreneurs. Table 1 provides the summary of the prevalence of EM and its respective dimensions amongst the sample firms.

Prevalence of overall EM

The sample firms' inclination to EM was measured on a ten-point Likert scale with 1 being the lowest propensity to EM while 10 was the highest. The ten-point Likert scale used in this study maintains the original version as used in the original EM instrument operationalised by Brown et al. (2001). The scale used is considered as an ordinal scale where the variables were ordered or ranked to the amount of the attribute possessed. Every subscale can be compared with one another in terms of a "greater than" or "less than" relationship. With regard to the scale used to measure the elements of EM in this study, the different levels of entrepreneurial or administrative propensity of the firms were illustrated on a ten point ordinal scale. On this continuum, the respondents were perceived to be more entrepreneurial when they indicate 7 compared to 6 and more entrepreneurial when they indicate 8 compared to 7. However, numbers utilise in ordinal scales such as this are non-quantitative because they indicate only relative position in an ordered series. Many scales in the behavioural sciences fall into this ordinal category (Hair et al., 1998).

As illustrated in Table 1, the vast majority of the sample firms rated their firm as high in EM with 77 (90.6%) of them rated at 6 or more on the EM scale. Only a small proportion of the sample firms (9.4%) were found to be on the lower part of the continuum of EM, that is, at or below the score of 5. On average, the sample firms rated themselves at 6.6 on the EM scale, which means that they tend to be on the higher end of the EM continuum.

Strategic orientation (SO)

The strategic orientation tendency of the sample firms was also examined accordingly. The sample firm inclination to SO was also measured on a ten-point Likert scale with 1 being the least EM while 10 being the highest. As illustrated in Table 1, the vast majority of the sample firms rated their firm as high in SO with 66 (77.6%) of them rated at 6 or more on the SO scale. Only a small

proportion of the sample firms (22.4 %) were found to be on the lower part of continuum of SO, that is, below the score of 5. On average, the sample firms rated themselves as at 6.87 on the SO scale, which means that they tend to be on the higher end of the SO continuum.

Management structure (MS)

The management structure tendency of the sample firms was also examined. The sample firm inclination to MS was also measured on a ten-point Likert scale where 1 being the least EM while 10 being the highest. As illustrated in Table 1, the majority of the sample firms rated their firm as high in MS with 54 (63.5%) of them rated at 6 or more on the MS scale. A lesser proportion of the sample firms (36.5 %) were found to be on the lesser continuum of MS, that is, below the score of 5. On average, the sample firms rated themselves at 6.12 on the MS scale, which means that they tend to be slightly on the higher end of the MS continuum.

Entrepreneurial culture (EC)

The entrepreneurial culture of the EM construct of the sample firms was also examined. The sample firm inclination to EC was also measured on a ten-point Likert scale where 1 being the least EC while 10 being the highest. As illustrated in Table 1, a vast majority of the sample firms rated their firm as high in EC with 80 (94.1%) of them rated at 6 or more on the EC scale. A smaller proportion of the sample firms (5.9%) were found to be on the lower part of the continuum of EC, that is, below the score of 5. On average, the sample firms rated themselves at 7.97 on the EC scale, which means that they tend to be at the higher end of the EC continuum.

Growth orientation (GO)

The growth orientation propensity of the sample firms was examined. The sample firm inclination to GO was measured on a ten-point Likert scale where 1 was the least EM and 10 was the highest. As illustrated in Table 1, the distribution of the scores is found to be about equal with slightly more on the lower end of the continuum. A total of 44.7% (33 firms) of the sample firms rated themselves on the scale 6 and above while the remaining 55.3% were on the scale 5 and below. On average, the sample firms rated themselves at 5.42 on the GO scale, which means that they tend to be in the middle of the GO continuum.

Resource orientation (RO)

The resource orientation tendency of the sample firms was also examined. The sample firm inclination to RO

Table 1. Descriptive statistics of the prevalence of EM and its various dimensions (Management structure, strategic orientation, entrepreneurial culture, growth orientation and resource orientation) of the sample firms (n = 85).

Variable	Variable value	No. of cases	% of cases	Mean	Median	Standard deviation
Global measures of EM	1	0	0.0	6.66	7.00	1.06
	2	0	0.0			
	3	1	1.2			
	4	1	1.2			
	5	6	7.1			
	6	28	32.9			
	7	36	42.4			
	8	8	9.4			
	9	5	5.9			
	10	0	0.0			
Management structure	1	0	0.0	6.12	6.00	1.68
	2	2	2.4			
	3	2	2.4			
	4	8	9.4			
	5	19	22.4			
	6	23	27.1			
	7	13	15.3			
	8	9	10.6			
	9	8	9.4			
	10	1	1.2			
Strategic orientation	1	1	1.2	6.87	7.00	2.09
	2	1	1.2			
	3	8	9.4			
	4	1	1.2			
	5	8	9.4			
	6	14	16.5			
	7	13	15.3			
	8	17	20.0			
	9	18	21.2			
	10	4	4.7			
Entrepreneurial culture	1	0	0.0	7.97	8.00	1.44
	2	0	0.0			
	3	1	1.2			
	4	0	0.0			
	5	4	4.7			
	6	10	11.8			
	7	11	12.9			
	8	23	27.1			
	9	27	31.8			
	10	9	10.6			
Growth orientation	1	5	5.9	5.42	5.00	2.41
	2	5	5.9			
	3	8	9.4			
	4	13	15.3			
	5	15	17.6			
	6	14	16.5			

Table 1. Continued.

	7	6	7.1			
	8	5	5.9			
	9	11	12.9			
	10	3	3.5			
	1	3	3.5			
	2	5	5.9			
	3	6	7.1			
	4	10	11.8			
Resource orientation	5	18	21.2	5.47	6.00	2.07
	6	21	24.7			
	7	7	8.2			
	8	8	9.4			
	9	5	5.9			
	10	2	2.4			

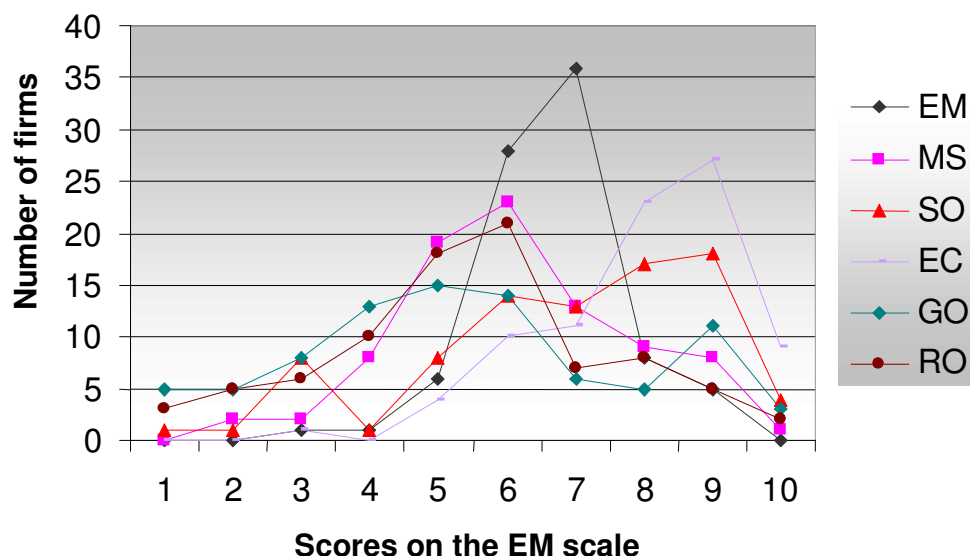


Figure 1. Summary of the prevalence of the global EM measure and its various dimensions.

was measured on a ten-point Likert scale with 1 being the least EM and 10 was the highest. As illustrated in Table 1, the distribution of the scores is found to be about equal with slightly more at the higher end of the continuum. A total of 50.59% (43 firms) of the sample firms rated themselves on the scale 6 and above while the remaining 49.01% were on the scale 5 and below. On average, the sample firms rated themselves at 5.47 on the RO scale, which means that they tend to be in the middle of the RO continuum.

Summary of the prevalence of EM

A summary of the prevalence of EM and its various

dimensions among the sample firms is displayed graphically in Figure 1. This is to assist in making comparisons between the various dimensions of EM in terms of the level of propensity to adopt the EM style of managing a firm amongst the owner-managers and CEOs of the sample firms.

DISCUSSION AND CONCLUSION

The explanation for high prevalence of the global EM amongst the firms may be that since the majority of the firms are young firms, they tend to be highly entrepreneurial. As for the individual sub-dimensions of EM, some possible explanation maybe suggested as to

why there are some differences in the level of EM practiced by the firms. In terms of the MS dimension, a relatively high prevalence of EM may be associated with the fact that the majority of the firms are small in size, which makes it less likely for them to have a rigid form of structure in their organisation, like a bureaucratic firm. Thus, their fair and practical choice of firm organisational structure could be one that is flat and in terms of organisational control would be loose and informal as suggested by the EM approach.

The firms also show high entrepreneurial propensity on the SO dimension which may be related to the assumption that these firms were putting high priority on opportunities rather than resources in steering the direction and speed of their business strategies. This may be understandable as these firms are young and they tend to be more proactive in recognising and seizing opportunities. This is also supported by the fact that market demand for technology and ICT-based products and services is still relatively new and strong within the MSC Malaysia and with regard to government contracts these firms have to be proactive in seizing these opportunities. Another potential explanation for this could be that as the firms are small, which means that they tend to own limited resources; this could lead them to prefer opportunities rather than resources (that is, human resources) in formulating their business strategies.

The EC dimension receives the highest score with 94.1% of the firms indicating scores of 6 and above on the EM scale. This may be associated with the fact that the majority of the entrepreneurs are young and may be assumed to be more enthusiastic and energetic in exploring new markets and opportunities and have lots of ideas that may be converted into profitable product or services. As previously argued, since these firms are small, therefore, their organisation structure tends to be flatter with loose and informal control system. This situation tends to promote the easier flow of ideas within the firm helping innovation, stimulated by new technology the firm is developing and a strong domestic market in the early stages which seeks new products and services.

The RO dimension seems to be receiving the lowest scores with only 45.9% of the firms being at the entrepreneurial end of the EM continuum. A potential explanation could be that since the majority of these firms are small not many of them have an excessive amount of resources in terms of human and equipment resources to be shared or rented amongst the firms. It could also be disputed that as these firms are competing with each others in the same market, they might be reluctant to share their resources especially their human resources for fear of expertise drain. Another possible explanation for the lack of a significant result with the RO dimension could also be related to the wording of the two RO items themselves as used in this study which is a full adoption of the original version by Brown et al. (2001). The first item of RO read as "We like to employ resources that we

borrow or rent" (on the entrepreneurial end of the continuum). This item may pose some confusion over the use of the word "employ" which may mean "to take on" or "hire" while what was intended of the item in this context is "use the services of". The second item reads as "In exploiting opportunities, having the idea is more important than just having money". This statement may also invite some confusion as just an "idea" may not mean a lot to an entrepreneur unless it is spelt out clearly in the statement, as for example a workable or promising idea which has high potential to be converted into a profitable product or services.

The firms also show low entrepreneurial propensity on the GO dimension. However, in reality, these firms are in fact growing steadily. This is reflected by the fact that 76.6% of the firms registered a 100% and above overall growth rate in the previous three years or about 33.3% annual growth. Thus, they may not be explicitly focussed on rapid growth but they are growing. A possible explanation for the low score on the GO dimension could be related to the bold nature of the questions presented in the instruments with regard to GO. For example, one item stated: "it is generally known throughout the firm that the firm's intention is to grow as big and as fast as possible". This statement may be perceived by the entrepreneurs in this study as too bold and demanding in terms of their expectation of growth since they are relatively young and predominantly small with limited resources. In addition, in order to grow faster and bigger entrepreneurs will need to seek for external funding which may results in them to surrender their equities in exchange. As suggested by Oakey (2003) involvement of external actors might cause a dilution of the entrepreneur's control over the firms which often is not an attractive option. Therefore, they tend to have mixed thoughts on this dimension of the EM approach.

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